BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF DELAWARE

IN THE MATTER OF THE APPLICATION	*	
OF ARTESIAN WATER COMPANY, INC.	*	
FOR AUTHORITY TO INCREASE RATES	*	PSC Docket No. 14- _____
AND CHARGES FOR WATER SERVICE	*	
(Filed April 11, 2014)	*	

DIRECT TESTIMONY
OF
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ON BEHALF OF
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Introduction

Q. PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS ADDRESS.

A. My name is Pauline M. Ahern. I am a Principal of AUS Consultants. My business address is 155 Gaither Drive, Suite A, Mt. Laurel, New Jersey 08054.

Q. PLEASE SUMMARIZE YOUR PROFESSIONAL EXPERIENCE AND EDUCATIONAL BACKGROUND.

A. I have offered expert testimony on behalf of investor-owned utilities before twenty-eight state regulatory commissions in the United States as well as one provincial regulatory commission in Canada on rate of return issues, including but not limited to common equity cost rate, fair rate of return, capital structure issues, and credit quality issues. I am a graduate of Clark University, Worcester, MA, where I received a Bachelor of Arts degree with honors in Economics. I have also received a Master of Business Administration with high honors and a concentration in finance from Rutgers University. The details of my educational background, expert witness appearances, presentations I have given and articles I have co-authored are shown in Appendix A supplementing this testimony.

On behalf of the American Gas Association ("A.G.A."), I calculate the A.G.A. Gas Index, which serves as the benchmark against which the performance of the American Gas Index Fund ("AGIF") is measured monthly. The A.G.A. Gas Index and AGIF are a market capitalization weighted index and a mutual fund, respectively, comprised of the common stocks of the publicly traded corporate members of the A.G.A.

I am also the publisher of AUS Utility Reports, responsible for supervising the production, publication, distribution and marketing of its reports. I am also responsible for overseeing the production of the annual Financial & Operating Statistics Report for the National Association of Water Companies ("NAWC").

I am a member of the Society of Utility and Regulatory Financial Analysts ("SURFA") where I serve on its Board of Directors, having served two terms as President, from 2006 – 2008 and 2008 – 2010. Previously, I held the positions of Secretary and Treasurer from 2004 – 2006. In 1992, I was awarded the professional designation "Certified Rate of Return Analyst" ("CRRA") by SURFA, which is based upon education, experience and the successful completion of a comprehensive written examination.

I am also an associate member of the National Association of Water Companies, serving on its Finance/Accounting/Taxation and Rates and Regulation Committees; a member of the Energy Association of Pennsylvania, formerly the Pennsylvania Gas Association; and a member of the American Finance, Financial Management and Energy Bar Associations. I am also a member of Edison Electric Institute's Cost of Capital Working Group and the American Gas Association's State Affairs Committee. In addition, I sit on the Advisory Board of the Financial Research Institute of the University of Missouri and the Advisory Council of New Mexico State University's Center for Public Utilities. Ms. Ahern is also a member of the Standard & Poor's ("S&P") Capital IQ Client Advisory Board.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose is to provide testimony on behalf of Artesian Water Company, Inc. ("AWC" or the "Company") regarding the appropriate common equity cost rate that it should be afforded the opportunity to earn on its jurisdictional rate base.

Q. WHAT IS YOUR RECOMMENDED OVERALL FAIR RATE OF RETURN?

A. I recommend that the Delaware Public Service Commission ("PSC" or the "Commission") authorize the Company the opportunity to earn an overall rate of return of 8.40% relative to the Company's expected capital structure as of September 30, 2014, which is expected to consist of 49.46% long-term debt at a cost rate of 5.84% and 50.54% common equity at a cost rate of 10.90%. The overall rate of return is summarized in Table 1 below:

Table 1

Type of Capital	Ratios	Cost Rate	Weighted Cost Rate
Long-Term Debt	49.46%	5.84%	2.89%
Common Equity	50.54%	10.90%	5.51%
Total	100.00%		8.40%

Q. HAVE YOU PREPARED AN EXHIBIT WHICH SUPPORTS YOUR RECOMMENDED COMMON EQUITY COST RATE?

A. Yes. It has been marked for identification as PMA Exhibit 1 and includes Schedules PMA-1 through PMA-12.

Q. PLEASE SUMMARIZE YOUR RECOMMENDED COMMON EQUITY COST RATE.

A. My recommended common equity cost rate of 10.90% is summarized on page 2 of Schedule PMA-1. As a wholly-owned subsidiary of Artesian Resources Corporation ("ARC" or the "Parent"), AWC's common stock is not publicly traded, hence a market-based common equity cost rate cannot be determined directly for AWC. Therefore, in arriving at my recommended common equity cost rate of 10.90%, I have assessed the market-based common equity cost rates of companies of relatively similar, but not necessarily identical risk, i.e., a proxy group of similar companies for insight into a recommended common equity cost rate applicable to AWC. Using companies of relatively comparable risk as proxies is consistent with the principles of fair rate of return established in the *Hope*[1] and *Bluefield*[2] cases, adding reliability to the informed expert judgment necessary to arrive at a recommended common equity cost rate. However, no proxy group can be selected that is identical in risk to AWC. Therefore, the proxy group's results must be adjusted, if necessary, to reflect the unique relative financial (credit) and/or business risks of the Company.

My recommendation results from the application of market-based cost of common equity models, the Discounted Cash Flow ("DCF") approach, the Risk Premium Model ("RPM") and the Capital Asset Pricing Model ("CAPM") to the market data of the proxy group of nine water companies whose selection will be

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1 *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591 (1944).

2 *Bluefield Water Works Improvement Co. v. Public Serv. Comm'n*, 262 U.S. 679 (1922).

discussed below. In addition, I also applied the DCF, RPM and CAPM to the market data of domestic, non-price regulated companies comparable in total risk to the nine water companies.

The results derived from each are as follows:

Table 2

	Proxy Group of Nine Water Companies
Discounted Cash Flow Model	8.58%
Risk Premium Model	11.26%
Capital Asset Pricing Model	9.92%
Cost of Equity Models Applied to Comparable Risk, Non-Price Regulated Companies	10.98%
Indicated Common Equity Cost Rate	10.45%
Flotation Cost Adjustment	0.20%
Business Risk Adjustment	0.25%
Recommended Common Equity Cost Rate	10.90%

After reviewing the cost rates based upon these models, I conclude that a common equity cost rate of 10.45% is indicated before any adjustment for AWC's flotation costs and greater business risk relative to the proxy group of nine water companies which will be discussed below. The indicated common equity cost rate based upon the nine water companies needs to be adjusted upward by 0.20% for flotation costs and 0.25% to reflect AWC's greater business risk as discussed

subsequently. After adjustment, the risk-adjusted common equity cost rate is 10.90% which is my recommended common equity cost rate.

General Principles

Q. WHAT GENERAL PRINCIPLES HAVE YOU CONSIDERED IN ARRIVING AT YOUR RECOMMENDED COMMON EQUITY COST RATE OF 10.90%?

A. In unregulated industries, the competition of the marketplace is the principal determinant of the price of products or services. For regulated public utilities, regulation must act as a substitute for marketplace competition. Assuring that the utility can fulfill its obligations to the public while providing safe and reliable service at all times requires a level of earnings sufficient to maintain the integrity of presently invested capital as well as permitting the attraction of needed new capital at a reasonable cost in competition with other firms of comparable risk. This is consistent with the fair rate of return standards established by the U.S. Supreme Court in the *Hope* and *Bluefield* cases. Consequently, marketplace data must be relied upon in assessing a common equity cost rate appropriate for ratemaking purposes. Therefore, my recommended common equity cost rate is based upon marketplace data for a proxy group of utilities as similar in risk as possible to AWC, based upon selection criteria which will be discussed subsequently. Just as the use of the market data for the proxy group adds reliability to the informed expert judgment used in arriving at a recommended common equity cost rate, the use of multiple common equity cost rate models also adds reliability when arriving at a recommended common equity cost rate.

Therefore I have considered DCF, RPM and CAPM equity cost rate models when assessing the appropriate common equity cost rate for AWC.

Business Risk

Q. PLEASE DEFINE BUSINESS RISK AND EXPLAIN WHY IT IS IMPORTANT TO THE DETERMINATION OF A FAIR RATE OF RETURN.

A. Business risk is the riskiness of a company's common stock without the use of debt and/or preferred capital. Examples of such general business risks to all utilities, i.e., electric, natural gas distribution and water, include the quality of management, the regulatory environment, customer mix and concentration of customers, service territory growth, capital intensity, and size, all of which have a direct bearing on earnings.

Business risk is important to the determination of a fair rate of return because the greater the level of risk, the greater the rate of return investors demand, consistent with the basic financial principle of risk and return.

Q. WHAT UNIQUE BUSINESS RISKS DOES THE WATER INDUSTRY IN GENERAL FACE TODAY?

A. Water is essential to life and unlike electricity or natural gas, water is the only utility product which is intended for customers to ingest. Consequently, water quality is of paramount importance to the health and well-being of customers and is therefore subject to additional and increasingly strict health and safety regulations. Beyond health and safety concerns, water utility customers also have significant aesthetic concerns regarding the water delivered to them and regulators

pay close attention to these concerns because of the strong feelings they arouse in consumers. Also, unlike many electric and natural gas utilities, water utilities serve a production function in addition to the delivery functions served by electric and gas utilities.

Water utilities obtain supply from wells, aquifers, surface water reservoirs or streams and rivers. Throughout the years, well supplies and aquifers have been environmentally threatened, with historically minor purification treatment giving way to major well rehabilitation, extensive treatment or replacement. Simultaneously, safe drinking water quality standards have tightened considerably, requiring multiple treatments prior to water delivery. Supply availability is also limited by drought, water source overuse, runoff, threatened species and habitat protection, and other operational, political and environmental factors. In addition, the United States Environmental Protection Agency ("EPA"), as well as individual state and local environmental agencies, are continually monitoring potential contaminants in the water supply and promulgating or expanding regulations when necessary. Increasingly stringent environmental standards necessitate additional capital investment in the distribution and treatment of water, exacerbating the pressure on water utilities' free cash flows through increased capital expenditures for infrastructure, repair and replacement. In the course of procuring water supplies and treating water so that it complies with Safe Drinking Water Act ("SDWA") standards, water utilities have an ever-increasing responsibility to be stewards of the environment

from which supplies are drawn, in order to preserve and protect essential natural resources of the United States.

Water utilities are typically vertically engaged in the entire process of acquisition, supply, production, treatment and distribution of water. In contrast, electric and natural gas companies, where transmission and distribution is generally separate from generation, do not produce the electricity or natural gas which they transmit and distribute. Hence, water utilities require significant capital investment not only in distribution and transmission systems but also in sources of supply (wells), production (treatment facilities), and storage. Capital investment is necessary both to serve additional customers and to replace aging systems, creating a major risk facing the water and wastewater utility industry.

Because the water and wastewater industry is more capital-intensive than the electric, combination electric and gas, and natural gas utilities, the investment required to produce a dollar of revenue is greater. For example, as shown on page 1 of Schedule PMA-2, it took $3.75 of net utility plant on average to produce $1.00 in operating revenues in 2012 for the water utility industry as a whole. For AWC, it took an even greater $4.91 of net utility plant to produce $1.00 of operating revenues. In contrast, for the electric, combination electric and gas, and natural gas utility industries, on average it took only $2.56, $2.12 and $1.56 respectively, to produce $1.00 in operating revenues in 2012. The greater capital intensity of water utilities is not a new phenomenon, as water utilities have exhibited a consistently and significantly greater capital intensity relative to electric, combination electric and gas, and natural gas utilities during the ten years

ended 2012, as shown on page 2 of Schedule PMA-2. As financing needs have increased over the last decade, the competition for capital from traditional sources has increased, making the need to maintain financial integrity and the ability to attract needed new capital increasingly important.

The National Association of Regulatory Utility Commissioners ("NARUC") also highlighted the challenges facing the water and wastewater industry stemming from its capital intensity. NARUC's Board of Directors adopted the following resolution in July 2013:[3]

WHEREAS, There is both a constitutional basis and judicial precedent allowing investor owned public water and wastewater utilities the opportunity to earn a rate of return that is reasonably sufficient to assure confidence in the financial soundness of the utility and its ability to provide quality service; *and*

WHEREAS, Through the *Resolution Supporting Consideration of Regulatory Policies Deemed as "Best Practices"* (2005), the National Association of Regulatory Utility Commissioners (NARUC) has previously recognized the role of innovative regulatory policies and mechanisms in the ability for public water and wastewater utilities to address significant infrastructure investment challenges facing water and wastewater system operators; *and*

* * *

WHEREAS, Recent analysis shows that as compared to other regulated utility sectors, significant and widespread discrepancies continue to be observed between commission authorized returns on equity and observed actual returns on equity among regulated water and wastewater utilities; *and*

WHEREAS, The extent of such discrepancies suggests the existence of challenges unique to the regulation of water and wastewater utilities; *and*

* * *

[3] "Resolution Addressing Gap Between Authorized Versus Actual Returns on Equity in Regulation of Water and Wastewater Utilities", Sponsored by the Committee on Water. Adopted by the NARUC Board of Directors, July 23, 2013.

WHEREAS, Deficient returns present a clear challenge to the ability of the water and wastewater industry to attract the capital necessary to address future infrastructure investment requirements necessary to provide safe and reliable service, which could exceed one trillion dollars over a 20-year period; *and*

WHEREAS, The NARUC Committee on Water recognizes the critical role of the implementation and the effective use of sound regulatory practice [sic] and the innovative regulatory policies identified in the *Resolution Supporting Consideration of Regulatory Policies Deemed as "Best Practices"*; and

* * *

RESOLVED, That the Board of Directors of the National Association of Regulatory Utility Commissioners, convened at its 2013 Summer Meeting in Denver, Colorado, identifies the implementation and effective use of sound regulatory practice [sic] and the innovative regulatory policies identified in the *Resolution Supporting Consideration of Regulatory Policies Deemed as "Best Practices"* (2005) as a critical component of a water and/or wastewater utility's reasonable ability to earn its authorized return; and *be it further*

RESOLVED, That NARUC recommends that economic regulators carefully consider and implement appropriate ratemaking measures as needed so that water and wastewater utilities have a reasonable opportunity to earn their authorized returns within their jurisdictions...

AWC itself is facing significant capital investment as it projects net capital expenditures of $88.148 million for 2014 through 2018, representing an increase of approximately 28% over 2012 net utility plant of $316.739 million.

The water utility industry also experiences lower relative depreciation rates. Lower depreciation rates, as one of the principal sources of internal cash flows for all utilities, mean that water utility depreciation as a source of internally-generated cash is far less than for electric, combination electric and gas, or natural gas utilities. Water utilities' assets have longer lives and, hence, longer capital recovery periods. Accordingly, water utilities face greater risk due to inflation, which results in a higher replacement cost per dollar of net plant than for other types of utilities. As shown on page 3 of Schedule PMA-2, water utilities

experienced an average depreciation rate of 3.1% for 2012 with AWC experiencing a much lower value of 2.2%. In contrast, in 2012, the electric, combination electric and gas, and natural gas utilities experienced average depreciation rates of 3.2%, 3.5% and 4.1%, respectively. As with capital intensity, the lower relative depreciation rates of water and wastewater utilities is not a new phenomenon, as shown on page 4 of Schedule PMA-2. Lower depreciation rates signify that the pressure on cash flows remains significantly greater for water utilities than for other types of utilities.

Not only is the water utility industry historically capital intensive, it is expected to incur significant capital expenditure needs over the next 20 years.

In 2011, the EPA stated the following[4]:

> The survey estimated a total national infrastructure need is $384.2 billion for the 20-year period from January 2011 through December 2030.
>
> * * *
>
> The large magnitude of the national need reflects the challenges confronting water systems as they deal with an infrastructure network that has aged considerably since these systems were constructed, in many cases, 50 to 100 years ago.
>
> * * *
>
> With $247.5 billion in needs over the next 20 years, transmission and distribution projects represent the largest category of need. This result is consistent with the fact that transmission and distribution mains account for most of the nation's water

[4] "Fact Sheet: "EPA's 2011 Drinking Water Infrastructure Needs Survey and Assessment", United States Environmental Protection Agency, Office of Water, April 2013.

infrastructure. The other categories, in descending order of need are: treatment, storage, source and a miscellaneous category of needs called "other".

Water utility capital expenditures as large as those projected by the EPA will require significant financing. The three sources typically used for financing are debt, equity (common and preferred) and cash flow. All three are intricately linked to the opportunity to earn a sufficient rate of return as well as the ability to achieve that return. Consistent with *Hope* and *Bluefield*, the return must be sufficient enough to maintain credit quality as well as enable the attraction of necessary new capital, be it debt or equity capital. If it is unable to raise debt or equity capital, the utility must turn to either retained earnings or free cash flow (operating cash flow (funds from operations) minus capital expenditures), both of which are directly linked to earning a sufficient rate of return. The level of free cash flows represents the financial flexibility of a company or a company's ability to meet the needs of its debt and equity holders. If either retained earnings or free cash flows are inadequate, it will be nearly impossible for the utility to attract new capital to invest in needed new infrastructure. It is clear that an insufficient rate of return can be financially devastating for utilities and for their customers, the ratepayers. Page 5 of Schedule PMA-2 demonstrates that the free cash flows (funds from operations minus capital expenditures) of water utilities as a percent of total operating revenues have been consistently negative and below that of the electric, combination electric and gas, and natural gas utilities for the ten years ended 2012, showing some improvement in 2011 and 2012. Magnifying the

impact of water utilities' potentially inadequate cash flow positions is a general inability to achieve their authorized rates of return on common equity.

In view of the foregoing, it is clear that the water utility industry's high degree of capital intensity and low depreciation rates, coupled with the need for substantial infrastructure capital spending, make the need to maintain financial integrity and the ability to attract needed new capital increasingly important in order for water utilities to be able to successfully meet the challenges they face.

Q. DOES A COMPANY'S SIZE HAVE A BEARING ON BUSINESS RISK?

A. Yes. Company size is a significant element of business risk for which investors expect to be compensated through greater returns. Smaller companies are simply less able to cope with significant events that affect sales, revenues and earnings. For example, smaller companies face more exposure to business cycles and economic conditions, both nationally and locally. Additionally, the loss of revenues from a few larger customers would have a greater effect on a small company than on a much larger company with a larger, more diverse, customer base. Moreover, smaller companies are generally less diverse in their operations and have less financial flexibility.

Further evidence of the risk effects of size include the fact that investors demand greater returns to compensate for the lack of marketability and liquidity of the securities of smaller firms. It is a basic financial principle that it is the use of funds invested and not the source of those funds that gives rise to the risk of any investment[5]. Therefore, the Commission should authorize a cost of common

[5] Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance (McGraw-Hill Book Company, 1996) 204-205, 229.

equity in this proceeding that reflects AWC's relevant risk, including the impact of its small size, which will subsequently be discussed.

Consistent with the financial principle of risk and return discussed above, such increased risk due to small size must be taken into account in the allowed rate of return on common equity.

Q. PLEASE DISCUSS HOW AWC'S SIZE INCREASES ITS BUSINESS RISK RELATIVE TO THE PROXY GROUP.

A. AWC is smaller than the average company in the proxy group of nine water companies based upon estimated market capitalization as will be discussed subsequently. As shown on Schedule PMA-12, page 1, AWC's estimated market capitalization of $220.188 million is lower than the average market capitalization of the water proxy group, $1.769 billion on March 3, 2014. Consequently, AWC has greater relative business risk because, all else being equal, size has a bearing on risk.

Financial Risk

Q. PLEASE DEFINE FINANCIAL RISK AND EXPLAIN WHY IT IS IMPORTANT TO THE DETERMINATION OF A FAIR RATE OF RETURN.

A. Financial risk is the additional risk created by the introduction of senior capital, i.e., debt and preferred stock, into the capital structure. The higher the proportion of senior capital in the capital structure, the higher the financial risk which must be factored into the common equity cost rate, consistent with the previously

mentioned basic financial principle of risk and return, i.e., investors demand a higher common equity return as compensation for bearing higher investment risk.

Q. NEVERTHELESS, CAN THE COMBINED BUSINESS RISKS, I.E., INVESTMENT RISK OF AN ENTERPRISE, BE PROXIED BY BOND AND CREDIT RATINGS?

A. Yes, similar bond ratings and issuer credit ratings reflect and are representative of similar combined business and financial risks, i.e., total risk faced by bond investors. Although specific business or financial risks may differ between companies, the same bond and credit ratings indicates that the combined risks are similar, albeit not necessarily equal, as the purpose of the bond and credit rating processes are to assess credit quality or credit risk and not common equity risk. Risk distinctions within Standard & Poor's ("S&P") bond rating categories are recognized by a plus or minus, i.e., within the A category, an S&P rating can be at A+, A, or A-. Similarly, risk distinctions for Moody's ratings are distinguished by numerical rating gradations, i.e., within the A category, a Moody's rating can be A1, A2 and A3.

Artesian Water Company, Inc.

Q. PLEASE DESCRIBE AWC.

A. AWC is the successor to the Richardson Park Water Company which was founded in 1905. AWC is the oldest, as well as the largest public water utility in Delaware. It provides service to approximately 80,000 customers in all three counties of Delaware. As stated previously, as a wholly-owned subsidiary of ARC, the Company's common stock is not publicly traded.

Q. HAVE YOU REVIEWED FINANCIAL INFORMATION FOR AWC?

A. Yes. As shown on page 1 of Schedule PMA-3, during the five year period ending 2012, the achieved average earnings rate on book common equity for AWC was 8.27%. The year ending 2012 average common equity based upon total permanent capital was 49.05%, while the five year average dividend payout ratio was 81.68%.

Total debt as a percent of EBITDA for the years 2008-2012 ranged between 3.62 and 4.93 times and averaged 4.34 times.

Proxy Group

Q. PLEASE EXPLAIN HOW YOU CHOSE THE PROXY GROUP OF NINE WATER COMPANIES.

A. I chose the proxy group by selecting those companies which meet the following criteria: 1) they are included in the Water Company Group of AUS Utility Reports (March 2014); 2) they have 70% or greater of 2012 total operating income derived from and 70% or greater of 2012 total assets devoted to regulated water operations; 3) at the time of the preparation of this testimony, they had not publicly announced that they were involved in any major merger or acquisition activity, i.e., one publicly-traded utility merging with or acquiring another; 4) they have not cut or omitted their common dividends during the five years ending 2012 or through the time of the preparation of this testimony; 5) they have a *Value Line* adjusted beta; 6) they have a positive *Value Line* five-year dividends per share (DPS) growth rate projection; and 7) they have *Value Line*, Reuters, Zacks

or Yahoo! Finance, consensus five-year earnings per share (EPS) growth rate projections.

The following nine companies met these criteria: American States Water Co., American Water Works Co., Inc., Aqua America, Inc., Artesian Resources Corp., California Water Service Corp., Connecticut Water Service, Inc., Middlesex Water Co., SJW Corp. and York Water Co.

Q. HAVE YOU REVIEWED FINANCIAL DATA FOR THE PROXY GROUP?

A. Yes. Page 2 of Schedule PMA-3 contains comparative capitalization and financial statistics for the nine proxy group water companies for the years 2008-2012.

As shown on page 2, during the five-year period ending 2012, the 2012 achieved average earnings rate on book common equity for the group is 9.94%. The 2012 common equity ratio based upon permanent capital (excluding short-term debt) was 50.72%, and the average dividend payout ratio was 64.06%.

Total debt as a percent of EBITDA for the years 2008-2012 ranged between 3.84 and 9.07 times, averaging 5.51 times, while funds from operations relative to total debt ranged between 16.14% to 20.65%, averaging 17.82%.

Common Equity Cost Rate Models

Q. ARE THE COST OF COMMON EQUITY MODELS YOU USE MARKET-BASED MODELS?

A. Yes. It is important to use market-based models because the cost of common equity is a function of investors' perception of risk, which is embodied in the

market prices they pay. The DCF model is market-based in that market prices are utilized in developing the dividend yield component of the model. The RPM is market-based in that the bond ratings and expected bond yields used in the application of the RPM reflect the market's assessment of bond/credit risk. In addition, the use of betas to determine the equity risk premium also reflects the market's assessment of market/systematic risk as betas are derived from regression analyses of market prices. The CAPM is market-based for many of the same reasons that the RPM is market-based, i.e., the use of expected bond (Treasury bond) yields and betas. Finally, the process of selecting the comparable risk non-price regulated companies is market-based in that it is based upon statistics which result from regression analyses of market prices and reflect the market's assessment of total risk.

Capital Structure Ratios

Q. WHAT CAPITAL STRUCTURE RATIOS DO YOU RECOMMEND BE EMPLOYED IN DEVELOPING AN OVERALL FAIR RATE OF RETURN APPROPRIATE FOR THE COMPANY?

A. I recommend that the estimated capital structure ratios at the end of the test period, September 30, 2014 of AWC be adopted for ratemaking purposes in developing an overall rate of return applicable to AWC. In short, the capital structure and related ratios I employ represent the capital structure which is expected to be financing the AWC stand-alone Delaware jurisdictional rate base. As stated previously, these ratios consist of 49.46% long-term debt and 50.54% common equity and are summarized on page Schedule PMA-4.

Q. ARE THE ESTIMATED CAPITAL STRUCTURE RATIOS AT SEPTEMBER 30, 2014 APPROPRIATE FOR COST OF CAPITAL PURPOSES?

A. Yes, AWC's estimated capital structure ratios at September 30, 2014 are appropriate for cost of capital purposes because they are indicative of the ratios and embedded cost rate of fixed capital which AWC will experience in the near-term future, the period of time in which new rates would be in effect. Since a water utility has an obligation to serve all of the time, it is incumbent upon the utility to maintain capital structure ratios which enable it to attract capital when required, assuming a sufficient level of earnings. AWC's estimated September 30, 2014 capital structure, upon which its requested overall rate of return is based, accomplishes the foregoing. In addition, it is consistent with the capital structures maintained by enterprises with similar risk, given its small size and upcoming extensive capital expenditure program, and it is not unduly costly to consumers.

Q. HOW DOES AWC'S RATEMAKING COMMON EQUITY RATIO OF 50.54%, ESTIMATED AT SEPTEMBER 30, 2014 COMPARE WITH THE COMMON EQUITY RATIOS MAINTAINED BY THE COMPANIES IN THE PROXY GROUP?

A. AWC's ratemaking common equity ratio of 50.54%, estimated at September 30, 2014 is conservative and reasonable to use, as well as consistent with the range of common equity ratios maintained, on average, by the companies in the proxy group of nine water companies upon which I base my common equity cost rate. The common equity ratios based upon permanent capital (excluding short-term

debt) of the nine water companies ranged from 44.61% to 57.51% in 2012 (the last year for which data for all the companies is available at this time) and averaged 50.72% as shown on page 3 of Schedule PMA-3. For the five years ending 2012, the average common equity ratios ranged between 44.23% and 54.91%, averaging 49.42%. As also discussed previously, AWC is smaller than the average water company in the proxy group and anticipates significant capital expenditures, therefore needing an appropriate common equity ratio and an adequate return on common equity to ensure sufficient earnings to maintain its credit quality and attract the capital necessary to fund its upcoming capital expenditures at reasonable costs.

In view of the foregoing, AWC's proposed common equity ratio is both conservative and reasonable given that AWC's proposed common equity ratio of 50.54% is: (1) within the range of common equity ratios maintained by the companies in the proxy group for 2012 and on average for the five years ending 2012; and (2) similar to the average common equity ratios maintained by the proxy group of water companies for 2012 and on average for the five years ended 2012.

Long-Term Debt Cost Rate

Q. WHAT COST RATE FOR LONG-TERM DEBT IS MOST APPROPRIATE FOR USE IN A COST OF CAPITAL DETERMINATION FOR AWC?

A. A long-term debt cost rate of 5.84% actual at December 31, 2013 is the most appropriate and is derived from AWC's long-term debt estimated to be outstanding at September 30, 2014 as summarized on page 2 of Schedule PMA-5.

The long-term debt cost rate is determined by employing a cost rate to maturity method, i.e., yield to maturity, using as inputs the stated coupon rate, net proceeds ratio, which reflects the necessary costs of issuance, early redemption premiums as applicable, and term in years. If such costs are not permitted to be recovered in the effective long-term debt cost rate, recovery would be at the expense of the common shareholders and the cost rate for common equity capital would be higher than otherwise. Once the cost rate to maturity, i.e., effective cost rate, is determined for each issue, a composite cost rate can be calculated based upon the total annualized long-term debt cost and total long-term debt outstanding. In addition, as shown on page 1 of Schedule PMA-5, the effective cost rates to maturity relative to the 6.58% Series P and 5.96% Series R First Mortgage Bonds each reflect a $242,014 rebate from CoBank while the 6.73% Series S First Mortgage Bonds reflects a rebate of $145,234. Thus, AWC's embedded long-term debt cost rate at September 30, 2014 is expected to be 5.84% as shown on page 2 of Schedule PMA-5.

Discounted Cash Flow Model (DCF)

Q. WHAT IS THE THEORETICAL BASIS OF THE DCF MODEL?

A. The theory underlying the DCF model is that the present value of an expected future stream of net cash flows during the investment holding period can be determined by discounting those cash flows at the cost of capital, or the investors' capitalization rate. DCF theory indicates that an investor buys a stock for an expected total return rate, which is derived from cash flows received in the form of dividends plus appreciation in market price (the expected growth rate).

Mathematically, the dividend yield on market price plus a growth rate equals the capitalization rate, i.e., the total common equity return rate expected by investors.

Since market prices are employed in its application, the DCF is based upon the Efficient Market Hypothesis ("EMH") first pioneered by Eugene F. Fama[6] in 1970. An efficient market is one in which security prices reflect all relevant information all the time. This implies that prices adjust instantaneously to new information, thus reflecting the intrinsic fundamental economic value of a security.[7] The EMH is a hypothesis only and not a fundamental "law" of finance, meaning that it is only a theory of how the market works and how investors make their investment decisions.

Nevertheless, the semistrong form of the EMH, which asserts that all publicly available information is fully reflected in securities prices, i.e., fundamental analysis cannot "outperform the market", has been historically generally held to be true because the use of insider information and recently the use of complicated computer algorithms often enable investors to "outperform the market" and earn excessive returns. This means that all perceived risks are taken into account by investors in the prices they pay for securities. Investors are thus aware of all publicly-available information, including bond ratings; discussions about companies by bond rating agencies and investment analysts; as well as the various cost of common equity methodologies ("models") discussed in the

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6 Eugene F. Fama, "Efficient Capital Markets: A Review of Theory and Empirical Work" (Journal of Finance, May 1970) 383-417.

7 Eugene F. Brigham, Financial Management – Theory & Practice, 5th Edition (The Dryden Press, 1989) 225.

financial literature. Hence, no single common equity cost rate model should be relied upon exclusively or weighted more heavily in determining a cost rate of common equity and that the results of multiple cost of common equity models should be taken into account.

Q. WHICH VERSION OF THE DCF MODEL DO YOU USE?

A. I utilize the single-stage constant growth DCF model because, in my experience, it is the most widely utilized version of the DCF used in public utility rate regulation. In my opinion, it is widely utilized because utilities are generally in the mature stage of their lifecycles and not transitioning from one growth stage to another.

Q. PLEASE DESCRIBE THE DIVIDEND YIELD YOU USED IN YOUR APPLICATION OF THE DCF MODEL.

A. The unadjusted dividend yields are based upon a recent (March 3, 2014) indicated dividend divided by the average of closing market prices for the 60 days ending March 3, 2014 as shown in Column 1 on page 1 of Schedule PMA-6.

Q. PLEASE EXPLAIN THE ADJUSTED DIVIDEND YIELD SHOWN ON PAGE 1 OF SCHEDULE PMA-6, COLUMN 7.

A. Because dividends are paid periodically (quarterly), as opposed to continuously (daily), an adjustment must be made to the dividend yield. This is often referred to as the discrete, or the Gordon Periodic, version of the DCF model.

DCF theory calls for the use of the full growth rate, or D_1, in calculating the dividend yield component of the model. However, since the various companies in the proxy group increase their quarterly dividend at various times

during the year, a reasonable assumption is to reflect one-half the annual dividend growth rate in the dividend yield component, or $D_{1/2}$. This is a conservative approach which does not overstate the dividend yield which should be representative of the next twelve-month period. Therefore, the actual average dividend yields in Column 1 on page 1 of Schedule PMA-6 have been adjusted upward to reflect one-half the average projected growth rate shown in Column 6.

Q. PLEASE EXPLAIN THE BASIS OF THE GROWTH RATES OF THE PROXY GROUP WHICH YOU USE IN YOUR APPLICATION OF THE DCF MODEL.

A. Schedule PMA-7 shows that approximately 51% of the common shares of the nine water companies are held by individuals as opposed to institutional investors. Institutional investors tend to have more extensive informational resources than most individual investors. Individual investors, with more limited resources, are therefore likely to place great significance on the opinions expressed by financial information services, such as *Value Line*, Reuters, Zacks and Yahoo! Finance, which are easily accessible and/or available on the Internet and through public libraries. Investors realize that analysts have significant insight into the dynamics of the industries and individual companies they analyze, as well as companies' historical and future abilities to effectively manage the effects of changing laws and regulations and ever changing economic and market conditions.

Security analysts' earnings expectations have a more significant, but not sole, influence on market prices than dividend expectations and on market price appreciation or the "growth" experienced by investors.[8]

Q. PLEASE SUMMARIZE YOUR DCF MODEL RESULTS.

A. As shown on page 1 of Schedule PMA-6, the average result of the application of the DCF model is 8.98% while the median result is 8.58%. In arriving at a conclusion of a DCF-indicated common equity cost rate for the proxy group, I have relied upon the median of the results of the DCF, due to the wide range of DCF results as well as the continuing volatile capital market conditions in light of the continuing fragile economic recovery, and to not give undue weight to outliers on either the high or the low side. In my opinion, the median is a more accurate and reliable measure of central tendency, and provides recognition of all the DCF results.

Q. PLEASE COMMENT UPON THE APPLICABILITY OF THE DCF MODEL IN ESTABLISHING A COST OF COMMON EQUITY FOR AWC.

A. The DCF model has a tendency to mis-specify investors' required common equity return rate when the market value of common stock differs significantly from its book value. Mathematically, because the "simplified" DCF model traditionally used in rate regulation assumes a market-to-book ratio of one, it understates/overstates investors' required return rate when market value exceeds or is less than book value. It does so because, in many instances, market prices

[8] Roger A. Morin, New Regulatory Finance (Public Utility Reports, Inc., 2006) 298-303.

reflect investors' assessments of long-range market price growth potentials (consistent with the infinite investment horizon implicit in the standard regulatory version of the DCF model) not fully reflected in analysts' shorter range forecasts of future growth in earnings per share (EPS), an accounting proxy. Thus, the market-based DCF model will result in a total annual dollar return on book common equity equal to the total annual dollar return expected by investors only when market and book values are equal, a rare and unlikely situation. In recent years, the market values of water utilities' common stocks have been well in excess of their book values as shown on page 2 of Schedule PMA-3 ranging between 145.24% and 173.44% for the five years ending 2012.

Under DCF theory, the rate of return investors require is related to the market price paid for a security. Thus, market prices form the basis of investment decisions and investors' expected rates of return. In contrast, a regulated utility is generally limited to earning on a net book value (depreciated original cost) rate base. Although market prices are significantly influenced by analysts' earnings per share (EPS) growth forecasts, market values can diverge from book values for a myriad of macroeconomic reasons including, but not limited to, EPS and dividends per share (DPS) expectations, merger or acquisition expectations, interest rates, investor sentiment, unemployment levels, monetary policy, fiscal policy, etc.

Traditional rate base/rate of return regulation, where a market-based common equity cost rate is applied to a book value rate base, presumes that market-to-book ratios are at unity or 1.00. However, there is ample empirical

evidence over sustained periods which demonstrate that this is an incorrect presumption. Since market-to-book ratios of unity or 1.00 are rarely the case as discussed above, regulatory allowed returns on equity (ROEs), i.e., earnings, have a limited effect on utilities' market/book ratios as the market prices of utility common stocks are also influenced by factors beyond the direct influence of the regulatory process.

As noted by Phillips:[9]

> Many question the assumption that market price should equal book value, believing that 'the earnings of utilities should be sufficiently high to achieve market-to-book ratios which are consistent with those prevailing for stocks of unregulated companies.'

In addition, Bonbright[10] states:

> In the first place, commissions cannot forecast, except within wide limits, the effect their rate orders will have on the market prices of the stocks of the companies they regulate. In the second place, *whatever the initial market prices may be, they are sure to change not only with the changing prospects for earnings, but with the changing outlook of an inherently volatile stock market.* In short, market prices are beyond the control, though not beyond the influence of rate regulation. Moreover, even if a commission did possess the power of control, any attempt to exercise it ... would result in harmful, uneconomic shifts in public utility rate levels. (italics added)

Q. IS IT REASONABLE TO EXPECT THE MARKET VALUES OF UTILITIES' COMMON STOCKS TO CONTINUE TO SELL WELL ABOVE THEIR BOOK VALUES?

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9 Phillips, Charles F., The Regulation of Public Utilities – Theory and Practice (Public Utility Reports, Inc., 1993) 395.

10 James C. Bonbright, Albert L. Danielsen and David R. Kamerschen, Principles of Public Utility Rates (Public Utilities Reports, Inc., 1988) 334.

A. Yes. Market-to-book ratios of regulated utilities vary from year to year, due to such influences as the effects on the "Great Recession", subsequent economic and capital market turmoil and the fledgling recovery and the like. In my opinion, the common stocks of all utilities will continue to sell substantially above their book values, on average, because many investors will likely continue to commit a greater percentage of their available capital to common stocks in view of lower interest rate alternative investment opportunities. The recent past and current capital market environment is in stark and historical contrast to the late 1970's and early 1980's when very high (by historical standards) yields on secured debt instruments in public utilities were available. Despite the fact that the market dipped to a low in March 2009 as the "Great Recession" unfolded and the U.S. has begun to recover from the "Great Recession" at a slow pace, the majority of utility stocks, on average, have continued to sell at market prices well above their book value. In addition, as previously discussed, such sustained high market-to-book ratios have been influenced by factors other than fundamentals such as actual and reported growth in EPS and DPS.

Q. CAN THE UNDER- OR OVERSTATEMENT OF THE INVESTORS' REQUIRED RATE OF RETURN ON THE MARKET BY THE DCF MODEL BE DEMONSTRATED MATHEMATICALLY?

A. Yes. Page 2 of Schedule PMA-6 demonstrates how a market-based DCF cost rate of 8.98% (my average DCF result, shown on page 1 of Schedule PMA-6) applied to a book value which is below market value will understate the investors' required return on market value. As shown, there is no realistic opportunity to

earn the expected market-based rate of return on book value. In Column A, investors expect a return on equity of 8.98%, the average DCF result for the proxy group, return on a market price of $27.34. Column B shows that when the 8.98% return rate on market value is applied to book value which is approximately 50% of market value, the total annual return opportunity is just $1.219 on book value. With an annual dividend of $0.839, there is an opportunity for growth of $0.380 which is just 1.39% in contrast to the 5.91% growth in market price expected by investors. The converse is also true. When the market-to-book value is below 1, the DCF cost rate will overstate the investors' required return on market value.

Hence, it is clear that the DCF model mis-specifies, that is, it either understates or overstates investors' required cost of common equity capital when market values exceed or are less than their underlying book values, and thus multiple cost of common equity models should be relied upon, rather than exclusive reliance upon the DCF model, when estimating investors' expectations.

Q. ARE YOU AWARE OF ANY REGULATORY COMMISSIONS THAT PRIMARILY RELY UPON THE DCF MODEL?

A. Yes. However, in my experience, the majority of regulatory commissions, including those which primarily rely upon the DCF model, also consider a combination of the various cost of common equity models available.

Consideration of multiple cost of common equity models is always appropriate, but is especially so at this time because, as stated above, the traditional application of the DCF mis-specifies investors' required return. The DCF mis-specifies, specifically understating investors' required return, because of

the confluence of recently rising market prices, the use of accounting measures as proxies for capital appreciation in the DCF, and the recent dramatic rise in actual and forecasted interest rates discussed below. The magnitude of this understatement can be found in the difference between the 5.91% growth in market values, i.e., growth in EPS, shown in column A on page 2 of Exhibit PMA-6, and the growth in market value would be only 1.39%, as shown in column B, when the 8.98% DCF cost rate is applied to book value, or up to approximately 450 basis points. Coupled with the added reliability and accuracy that the use of multiple cost of common equity models provides in the estimation of the cost of common equity, it is more imperative than ever to not give exclusive, primary or even greater reliance to the DCF analysis at this time.

Q. IS THERE ACADEMIC SUPPORT FOR THE NEED TO RELY UPON MORE THAN ONE COST OF COMMON EQUITY MODEL IN ARRIVING AT A RECOMMENDED COMMON EQUITY COST RATE?

A. Yes. For example, Phillips[11] states:

> Since regulation establishes a level of authorized earnings which, in turn, implicitly influences dividends per share, estimation of the growth rate from such data is an inherently circular process. *For these reasons, the DCF model "suggests a degree of precision which is in fact not present" and leaves "wide room for controversy and argument about the level of k".* (italics added) (p. 396)
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> * * *
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> Despite the difficulty of measuring relative risk, the comparable earnings standard is no harder to apply than is the market-determined standard. *The DCF method, to illustrate, requires a subjective determination of the growth rate the market is contemplating.*

[11] Charles F. Phillips, Jr., The Regulation of Public Utilities-Theory and Practice (Public Utility Reports, Inc., 1993) 396, 398.

Moreover, as Leventhal has argued: 'Unless the utility is permitted to earn a return comparable to that available elsewhere on similar risk, it will not be able in the long run to attract capital.' (italics added) (p. 398)

Also, Morin[12] states:

Each methodology requires the exercise of considerable judgment on the reasonableness of the assumptions underlying the methodology and on the reasonableness of the proxies used to validate a theory. *The inability of the DCF model to account for changes in relative market valuation, discussed below, is a vivid example of the potential shortcomings of the DCF model when applied to a given company.* Similarly, the inability of the CAPM to account for variables that affect security returns other than beta tarnishes its use. (italics added)

No one individual method provides the necessary level of precision for determining a fair return, but each method provides useful evidence to facilitate the exercise of an informed judgment. Reliance on any single method or preset formula is inappropriate when dealing with investor expectations because of possible measurement difficulties and vagaries in individual companies' market data. (Morin, p. 428)

* * *

The financial literature supports the use of multiple methods. Professor Eugene Brigham, a widely respected scholar and finance academician, asserts:[1] (footnote omitted)

Three methods typically are used: (1) the Capital Asset Pricing Model (CAPM), (2) the discounted cash flow (DCF) method, and (3) the bond-yield-plus-risk-premium approach. These methods are not mutually exclusive – no method dominates the others, and all are subject to error when used in practice. Therefore, when faced with the task of estimating a company's cost of equity, we generally use all three methods and then choose among them on the basis of our confidence in the data used for each in the specific case at hand.

Another prominent finance scholar, Professor Stewart Myers, in an early pioneering article on regulatory finance, stated:[2](footnote omitted)

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[12] Morin 428-431.

Use more than one model when you can. Because estimating the opportunity cost of capital is difficult, only a fool throws away useful information. That means you should not use any one model or measure mechanically and exclusively. Beta is helpful as one tool in a kit, to be used in parallel with DCF models or other techniques for interpreting capital market data.

Reliance on multiple tests recognizes that no single methodology produces a precise definitive estimate of the cost of equity. As stated in Bonbright, Danielsen, and Kamerschen (1988), *'no single or group test or technique is conclusive.'* Only a fool discards relevant evidence. (italics in original) (Morin, p. 430)

* * *

While it is certainly appropriate to use the DCF methodology to estimate the cost of equity, *there is no proof that the DCF produces a more accurate estimate of the cost of equity than other methodologies. Sole reliance on the DCF model ignores the capital market evidence and financial theory formalized in the CAPM and other risk premium methods. The DCF model is one of many tools to be employed in conjunction with other methods to estimate the cost of equity. It is not a superior methodology that supplants other financial theory and market evidence. The broad usage of the DCF methodology in regulatory proceedings in contrast to its virtual disappearance in academic textbooks does not make it superior to other methods.* The same is true of the Risk Premium and CAPM methodologies. (italics added) (Morin, p. 431)

Brigham and Gapenski[13] state:

In practical work, *it is often best to use all three methods* – CAPM, bond yield plus risk premium, and DCF – and then apply judgment when the methods produce different results. People experienced in estimating equity capital costs recognize that both careful analysis and some very fine judgments are required. It would be nice to pretend that these judgments are unnecessary and to specify an easy, precise way of determining the exact cost of equity capital. Unfortunately, this is not possible. Finance is in large part a matter of judgment, and we simply must face this fact. (italics in original)

[13] Eugene F. Brigham and Louis C. Gapenski, Financial Management – Theory and Practice 4th Edition, (The Dryden Press, 1985) 256.

Finally, Brigham and Daves[14] reiterate Brigham and Gapenski's comments when they state:

> Recent surveys found that the CAPM approach is by far the most widely used method. Although most firms use more than one method, almost 74 percent of respondents in one survey, and 85 percent in the other, used the CAPM.[12] (footnote omitted)
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> * * *
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> Approximately 16 percent now use the DCF approach, down from 31 percent in 1982. The bond-yield-plus-risk-premium is used primarily by companies that are not publicly traded.
>
> People experienced in estimating the cost of equity recognize that both careful analysis and sound judgment are required. It would be nice to pretend that judgment is unnecessary and to specify an easy, precise way of determining the exact cost of equity capital. Unfortunately, this is not possible – finance is in large part a matter of judgment, and we simply must face this fact.

Q. DO YOU HAVE ANY OTHER CONCERNS WITH THE RESULTS OF THE APPLICATION OF THE DCF MODEL?

A. Yes. As discussed above, I have relied upon the median results of my DCF analysis so as to not give undue weight to outliers on either the high side or the low side as well as the greater accuracy and reliability of the median as a measure of central tendency when there is a wide range of results.

The DCF results for the proxy group of nine water companies ranges from a low of 5.44% to a high of 13.51% as shown on page 1 of Schedule PMA-6, covering 807 basis points (8.07%) representing an implied risk differential between the water company with the lowest DCF results and the water company with the highest. Likewise the DCF results for the proxy group of non-price

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[14] Eugene F. Brigham and Phillip R. Daves, Intermediate Financial Management,

regulated companies ranges from a low of 5.95% to a high of 18.51% as shown on page 5 of Schedule PMA-10, covering 1,296 basis points (12.96%), again indicating an implied risk differential between the non-price regulated companies with the lowest and highest DCF results.

Such wide ranges of DCF indicated costs of common equity are inconsistent with the relative small range of bond ratings of either the water or non-price regulated proxy companies. As shown on page 4 of Schedule PMA-8 and page 7 of Schedule PMA-10, the S&P bond ratings for the water proxy group range from AA- to A- and from A to BBB+ for the non-price regulated proxy group, respectively. Such a limited range of bond ratings is inconsistent with the wide range of DCF results for both proxy groups.

Since S&P bond ratings are generally analogous to Moody's bond ratings, an indication of the perceived risk differential between AA- and A- public utility bonds is the spread between Moody's yields for AA- and A- public utility bonds. Likewise, the spread between Moody's yields for A and BBB+ rated corporate bonds is an indication of the risk differential for the non-price regulated proxy group. It can be interpolated from the bond yields shown on page 5 of Schedule PMA-8 that a AA- public utility bond would have been yielding 4.46%[15] for the three months ended January 2014 and an A- rated public utility bond would have been yielding 4.59%[16] for the three months ended January 2014. Similarly, using average 3-month ending January 2014 A and BBB corporate bond yield averages

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(Thomson-Southwestern, 2007) 332-333.

15 4.46% = 4.53% (A rated public utility bond yield) – (1/3 * 0.21% (spread between A and Aa rated public utility bond yield

of 4.79% and 5.32% from Mergent Bond Record (February 2014, Vol. 81, No. 2), the A rated corporate bond yield averaged 4.79% and the BBB corporate bond yield average 5.14%[17]. This indicates a risk differential of 0.13% for the water proxy group and 0.35% for the non-regulated proxy group, in sharp contrast to the 8.07% and 12.96% implied in the DCF results for each group respectively.

Similarly, the average results of the traditional CAPM and the empirical CAPM ("ECAPM") represent a tighter range of results than the DCF for both the water and non-price regulated proxy groups. For both the water and non-price regulated proxy groups, the traditional CAPM results range from 8.78% to 11.17%, covering 239 basis points and the ECAPM results ranged from 9.67% to 11.46% covering 179 basis points. On average, the risk differential between the non-price regulated companies with the lowest and highest average traditional CAPM and ECAPM results is 209 basis points or 2.09%, again in contrast to the implied risk differentials for the DCF results..

Since the indicated risk differentials related to each proxy group's DCF results are significantly greater than the indicated risk differentials related to each proxy group's S&P bond ratings and CAPM results, it is clear, in my opinion, that the DCF does not accurately or reliably estimate the cost of common equity for either the water or non-price regulated proxy group. In addition, the DCF is at odds with the very foundation, i.e., the EMH, upon which it is predicated.

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16 4.59% = 4.53% (A rated public utility bond yield) + (1/3 * 0.45% (spread between A and Aa rated public utility bond yield

17 5.14% = 4.79% (A rated corporate bond yield) – (2/3 * 0.53% (spread between A and Aa rated corporate bond yield

In view of all of the foregoing, in my opinion, the PSC should not give exclusive, primary or even greater reliance to the DCF analysis than to the results of other common equity cost rates at this time.

The Risk Premium Model (RPM)

Q. PLEASE DESCRIBE THE THEORETICAL BASIS OF THE RPM.

A. The RPM is based upon the basic financial principle of risk and return, namely, that investors require greater returns for bearing greater risk. The RPM recognizes that common equity capital has greater investment risk than debt capital, as common equity shareholders are last in line in any claim on a company's assets and earnings, with debt holders being first in line. Therefore, investors require higher returns from common stocks than from investment in bonds to compensate them for bearing the additional risk.

While the investors' required common equity return cannot be directly determined or observed, it is possible to directly observe bond returns and yields. According to RPM theory, one can assess a common equity risk premium over bonds, either historically or prospectively, and then use that premium to derive a cost rate of common equity.

In summary, according to RPM theory, the cost of common equity equals the expected cost rate for long-term debt capital plus a risk premium over that cost rate to compensate common shareholders for the added risk of being unsecured and last-in-line for any claim on the corporation's assets and earnings.

Q. PLEASE EXPLAIN HOW YOU DERIVED YOUR INDICATED COST OF COMMON EQUITY BASED UPON THE RPM.

A. I relied upon the results from the application of two risk premium methods. The first method is the Predictive Risk Premium Model™ (PRPM™), while the second method is a risk premium model using a total market approach.

Q. PLEASE EXPLAIN THE PRPM™.

A. The PRPM™, published in the *Journal of Regulatory Economics (JRE)*[18], was developed from the work of Robert F. Engle who shared the Nobel Prize in Economics in 2003 "for methods of analyzing economic time series with time-varying volatility ("ARCH")[19]" with "ARCH" standing for autoregressive conditional heteroskedasticity. In other words, volatility changes over time and is related from one period to the next, especially in financial markets. Engle discovered that the volatility in prices and returns also clusters over time, is therefore highly predictable and can be used to predict future levels of risk and risk premiums. The PRPM™ estimates the risk / return relationship directly by analyzing the actual results of investor behavior rather than using subjective judgment as to the inputs required for the application of other cost of common equity models. In addition, the PRPM™ is not based upon an estimate of investor behavior, but rather upon the evaluation of the results of that behavior, i.e., the variance of historical equity risk premiums. In other words, the predicted equity risk premium is generated by the prediction of volatility (risk). Also, in the derivation of the premiums, greater weight is given to more recent time periods, in contrast to reliance upon the arithmetic mean premium which gives equal

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18 "A New Approach for Estimating the Equity Risk Premium for Public Utilities", Pauline M. Ahern, Frank J. Hanley and Richard A. Michelfelder, Ph.D. The Journal of Regulatory Economics (December 2011), 40:261-278.

19 www.nobelprize.org

weight to each observed premium.

The inputs to the model are the historical returns on the common shares of each company in the proxy group minus the historical monthly yield on long-term U.S. Treasury securities through January 2014. Using a generalized form of ARCH, known as GARCH, each water company's projected equity risk premium was determined using Eviews© statistical software. The forecasted 30-year U.S. Treasury Bond (Note) yield based upon the consensus forecast derived from the December 1, 2013 and March 1, 2014 *Blue Chip Financial Forecasts (Blue Chip)* is 4.40%, as discussed below. That was then added to each company's PRPM™-derived equity risk premium to arrive at a PRPM™ derived cost of common equity as shown on page 2 of Schedule PMA-8, which presents the results for each proxy company as well as the average and median results. As shown on page 2, the average PRPM™ indicated common equity cost rate is 12.72% and the median is 11.67% for the nine water companies. I rely upon the median PRPM™ result due to the wide range of results and to not give any undue weight to any high or low outliers.

Q. PLEASE EXPLAIN THE TOTAL MARKET APPROACH RPM.

A. The total market approach RPM adds a prospective public utility bond yield to an equity risk premium which is derived from a beta-adjusted total market equity risk premium and an equity risk premium based upon the S&P Utilities Index.

Q. PLEASE EXPLAIN THE BASIS OF THE EXPECTED BOND YIELD OF 5.27% APPLICABLE TO THE NINE WATER COMPANIES SHOWN ON PAGE 3 OF SCHEDULE PMA-8.

A. The first step in the total market approach RPM analysis is to determine the expected bond yield. Because both ratemaking and the cost of capital, including common equity cost rate, are prospective in nature, a prospective yield on similarly-rated long-term debt is essential. Hence, I rely upon a consensus forecast of about 50 economists of the expected yield on Aaa rated corporate bonds for the six calendar quarters ending with the second calendar quarter of 2015 averaged with the long-range forecasts for 2015-2019 and 2020-2024 from the March 1, 2014 and December 1, 2013 *Blue Chip*, respectively (shown on pages 9 and 10 of Schedule PMA-8). As shown on Line No. 1 of page 3 of Schedule PMA-8, the average expected yield on Moody's Aaa rated corporate bonds is 5.14%. An adjustment of 0.16% is necessary to adjust that average Aaa corporate bond yield to be equivalent to a Moody's A rated public utility bond, as shown on Line No. 2 and explained in Note 2, resulting in an expected bond yield applicable to a Moody's A rated public utility bond of 5.30% as shown on Line No. 3.

Since the nine water companies' average Moody's bond rating is a split A1/A2, an adjustment of a negative 0.04% is necessary to make the prospective bond yield applicable to an A1/A2 public utility bond, as detailed in Note 3 on page 3 of Schedule PMA-8. Therefore, the expected specific bond yield is 5.27% for the nine water companies as shown on Line No. 5.

Q. PLEASE EXPLAIN THE METHOD UTILIZED TO ESTIMATE THE EQUITY RISK PREMIUM.

A. I evaluated the results of two different market equity risk premium studies based upon Ibbotson Associates' data, *Value Line's* forecasted total annual market return in excess of the prospective yield on Moody's Aaa corporate bonds, as well as two different studies of the equity risk premium for public utilities with Moody's A rated bonds as detailed on pages 8 and 11 of Schedule PMA-8. As shown on Line No. 3, page 7, the mean equity risk premium of the nine water companies is 4.76%. This estimate is the result of an average of a beta-derived equity risk premium as well as the average public utility equity risk premium relative to bonds rated A by Moody's based upon holding period returns.

Q. PLEASE EXPLAIN THE BASIS OF THE BETA-DERIVED EQUITY RISK PREMIUM.

A. The basis of the beta-derived equity risk premium applicable to the proxy group is shown on page 8 of Schedule PMA-8. The beta-determined equity risk premium should receive substantial weight because betas are derived from the market prices of common stocks over a recent five-year period. Beta is a meaningful measure of prospective relative risk to the market as a whole and a logical means by which to allocate a company's/proxy group's share of the market's total equity risk premium relative to corporate bond yields.

The total market equity risk premium utilized is 6.98%, based upon a weighted average of the long-term arithmetic mean historical market equity risk premium, a predicted market equity risk premium based upon the PRPM^{TM} and a forecasted market risk premium based upon *Value Line's* projected market appreciation and dividend yield, giving the PRPM^{TM} results 50% weight and the

Value Line and Ibbotson studies 25% weight. I have given the PRPM™ result more weight because the PRPM™ is based upon a minimum of restrictive assumptions[20]. In addition, the PRPM™ is "not based upon an estimate of investor behavior, but rather, upon a statistical analysis of actual investor behavior" because it evaluates the results of that behavior, i.e., the volatility of historical equity risk premiums.[21]

Q. HOW DID YOU DERIVE THE LONG-TERM HISTORICAL MARKET EQUITY RISK PREMIUM?

A. To derive the historical (expectational) market equity risk premium, I used the most recent Morningstar data on holding period returns for the large company common stocks from the Ibbotson® SBBI® 2013 Valuation Yearbook – Market Results for Stocks, Bonds, Bills and Inflation ("SBBI – 2013")[22] and the average historical yield on Moody's Aaa and Aa rated corporate bonds for the period 1926-2012. The use of holding period returns over a very long period of time is useful because it is consistent with the long-term investment horizon presumed by the DCF model.

Consequently, as explained in note 1 on page 8 of Schedule PMA-8, the long-term arithmetic mean monthly total return rate on large company common stocks of 11.83% and the long-term arithmetic mean monthly yield on Moody's

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20 Ahern, Hanley, Michelfelder 277.

21 "Comparative Evaluation of the Predictive Risk Premium Model™, the Discounted Cash Flow Model and the Capital Asset Pricing Model:, co-authored with Richard A. Michelfelder, Ph.D., Rutgers University, Dylan W. D'Ascendis, Frank J. Hanley, *The Electricity Journal*, May 2013.

22 Ibbotson® SBBI® - 2013 Valuation Yearbook – Market Results for Stocks, Bonds, Bills and Inflation (Morningstar, Inc., 2013).

Aaa and Aa rated corporate bonds of 6.23% were used. As shown on Line No. 1, the resultant long-term historical equity risk premium on the market as a whole is 5.60%.

I used arithmetic mean monthly total return rates for the large company stocks and yields (income returns) for the Moody's Aaa/Aa corporate bonds, because they are appropriate for cost of capital purposes as noted in the SBBI – 2013. Arithmetic mean return rates and yields are appropriate because ex-post (historical) total returns and equity risk premiums differ in size and direction over time, providing insight into the variance and standard deviation of returns. Because the arithmetic mean captures the prospect for variance in returns and equity risk premiums, it provides the valuable insight needed by investors in estimating future risk when making a current investment. Absent such valuable insight into the potential variance of returns, investors cannot meaningfully evaluate prospective risk. If investors alternatively relied upon the geometric mean of ex-post equity risk premiums, they would have no insight into the potential variance of future returns because the geometric mean relates the change over many periods to a constant rate of change, thereby obviating the year-to-year fluctuations, or variance, *critical to risk analysis.*

Only the arithmetic mean takes into account all of the returns / premiums, thereby providing meaningful insight into the variance and standard deviation of those returns / premiums.

Q. PLEASE EXPLAIN THE DERIVATION OF PRPM^{TM} MARKET EQUITY RISK PREMIUM.

A. The inputs to the model are the historical monthly returns on large company common stocks minus the monthly yields on Aaa corporate bonds during the period from January 1928 through January 2014. Using the previously discussed generalized form of ARCH, known as GARCH, the market's projected equity risk premium was determined using Eviews© statistical software. The resulting predicted market equity risk premium based upon the PRPM™ of 9.26% is shown on Line No. 2 on page 8 of Schedule PMA-8.

Q. PLEASE EXPLAIN HOW YOU INCORPORATED *VALUE LINE'S* FORECASTED TOTAL ANNUAL MARKET RETURN MINUS THE PROSPECTIVE YIELD ON AAA RATED CORPORATE BONDS IN YOUR DEVELOPMENT OF AN EQUITY RISK PREMIUM FOR YOUR RPM ANALYSIS?

A. Once again, because both ratemaking and the cost of capital, including the cost rate of common equity, are prospective, a prospective market equity risk premium is essential. The derivation of the forecasted or prospective market equity risk premium can be found in note 3 on page 8 of Schedule PMA-8. Consistent with the development of the dividend yield component of my DCF analysis, it is derived from an average of the most recent thirteen weeks ending March 7, 2014 3-5 year median market price appreciation potential by *Value Line* plus an average of the median estimated dividend yield for the common stocks of the 1,700 firms covered in *Value Line*'s Standard Edition as explained in detail in Note 1 on page 2 of Schedule PMA-9.

The average median expected price appreciation is 31% which translates to a 6.98% annual appreciation and, when added to the average (similarly calculated) median dividend yield of 1.97% equates to a forecasted annual total return rate on the market as a whole of 8.95%. The forecasted total market equity risk premium of 3.81%, shown on Line No. 3, page 8 of Schedule PMA-8, is derived by deducting the March 1, 2014 and December 1, 2013 *Blue Chip* consensus estimate of about 50 economists of the expected yield on Moody's Aaa rated corporate bonds for the six calendar quarters ending with the second calendar quarter 2015 averaged with the projected long-range forecasts for 2015-2019 and 2020-2024 of 5.14% from the *Value Line*-derived projected market risk premium of 8.95% (3.81% = 8.95% - 5.14%).

In arriving at my conclusion of equity risk premium of 6.98% on Line No. 4 on page 8, I have given 25% weight to the historical market equity risk premium of 5.60%, 50% to the PRPM^{TM} based market equity risk premium of 9.26% and 25% to the forecasted market equity risk premium of 3.81% shown on Line Nos. 1, 2 and 3, respectively (6.98% = (5.60 x 25%) + (9.26% x 50%) + (3.81% x 25%)).

Q. WHAT IS YOUR CONCLUSION OF A BETA-DERIVED EQUITY RISK PREMIUM FOR USE IN YOUR RPM ANALYSIS?

A. As shown on page 1 of Schedule PMA-9, the most current median *Value Line* beta for the nine water companies is 0.65. Applying the median beta of the proxy group of 0.65 (consistent with my reliance upon the median DCF and PRPM^{TM} results as previously discussed), to the market equity risk premium of 6.98%

results in a beta adjusted equity risk premium of 4.54% for the nine water companies.

Q. HOW DID YOU DERIVE THE 4.97% EQUITY RISK PREMIUM BASED UPON THE S&P UTILITY INDEX AND MOODY'S A RATED PUBLIC UTILITY BONDS?

A. First, I derived the long-term monthly arithmetic mean equity risk premium between the S&P Utility Index total returns of 10.69% and monthly A rated public utility bond yields of 6.53% from 1928-2012 to arrive at an equity risk premium of 4.16% as shown on Line No. 3 on page 11 of Schedule PMA-8. I then performed the PRPM^{TM} using the same historical monthly equity risk premiums to arrive at the PRPM^{TM} derived equity risk premium of 5.24% for the S&P Utility Index shown on Line No. 4, on page 10. I then assigned a 75% weight to the PRPM^{TM} result and a 25% weight to the historical risk premium. The resulting weighted average was 4.97%.

Q. WHAT IS YOUR CONCLUSION OF AN EQUITY RISK PREMIUM FOR USE IN YOUR TOTAL MARKET APPROACH RPM ANALYSIS?

A. The equity risk premium applicable to the proxy group of nine water companies is the average of the beta-derived premium, 4.54%, and that based upon the holding period returns of public utilities with A rated bonds, 4.97%, as summarized on Line No. 3 on Schedule PMA-8, page 7, i.e., 4.76% (4.76% = (4.54% + 4.97%)/2).

Q. WHAT IS THE INDICATED RPM COMMON EQUITY COST RATE BASED UPON THE TOTAL MARKET APPROACH?

A. It is 10.03% for the nine water companies as shown on Line No. 7 on Schedule PMA-8, page 3.

Q. WHAT ARE THE RESULTS OF YOUR APPLICATION OF THE PRPM™ AND THE TOTAL MARKET APPROACH RPM?

A. As shown on page 1 of Schedule PMA-8, the indicated RPM-derived common equity cost rate is 11.26%, derived by giving greater weight to the PRPM™ results as explained previously.

The Capital Asset Pricing Model (CAPM)

Q. PLEASE EXPLAIN THE THEORETICAL BASIS OF THE CAPM.

A. CAPM theory defines risk as the covariability of a security's returns with the market's returns as measured by beta (β). A beta less than 1.0 indicates lower variability while a beta greater than 1.0 indicates greater variability than the market.

The CAPM assumes that all other risk, i.e., all non-market or unsystematic risk, can be eliminated through diversification. The risk that cannot be eliminated through diversification is called market, or systematic, risk. In addition, the CAPM presumes that investors require compensation only for these systematic risks which are the result of macroeconomic and other events that affect the returns on all assets. The model is applied by adding a risk-free rate of return to a market risk premium, which is adjusted proportionately to reflect the systematic risk of the individual security relative to the total market as measured by beta. The traditional CAPM model is expressed as:

$$R_s = R_f + \beta(R_m - R_f)$$

Where: R_s = Return rate on the common stock

R_f = Risk-free rate of return

R_m = Return rate on the market as a whole

β = Adjusted beta (volatility of the security relative to the market as a whole)

Numerous tests of the CAPM have measured the extent to which security returns and betas are related as predicted by the CAPM, confirming the theory's validity. The empirical CAPM (ECAPM) reflects the reality that while the results of these tests support the notion that beta is related to security returns, the empirical Security Market Line (SML) described by the CAPM formula is not as steeply sloped as the predicted SML.[23]

In view of theory and practical research, I have applied both the traditional CAPM and the ECAPM to the companies in the proxy group and averaged the results.

Q. PLEASE DESCRIBE YOUR SELECTION OF A RISK-FREE RATE OF RETURN.

A. As shown in column 3 on page 1 of Schedule PMA-9, the risk-free rate adopted for both applications of the CAPM is 4.40%. Because both the cost of capital and ratemaking are prospective in nature, it is appropriate to use a forecasted risk-free rate in a CAPM analysis. Therefore, the risk-free rate for my CAPM analysis is based upon the average of the consensus forecast of the reporting economists in the March 1, 2014 and December 1, 2013 *Blue Chip* of the expected yields on 30-

[23] Morin 175.

year U.S. Treasury bonds for the six quarters ending with the second calendar quarter of 2015 averaged with the long-range forecasts for 2015-2019 and 2020-2024 as shown in note 2, page 2 of Schedule PMA-9.

Q. WHY IS THE YIELD ON LONG-TERM U.S. TREASURY BONDS APPROPRIATE FOR USE AS THE RISK-FREE RATE?

A. The yield on long-term U.S. Treasury T-Bonds is almost risk-free and its term is consistent with the long-term cost of capital to public utilities measured by the yields on A rated public utility bonds, the long-term investment horizon inherent in utilities' common stocks, the long-term investment horizon presumed in the standard DCF model employed in regulatory ratemaking, and the long-term life of the jurisdictional rate base to which the allowed fair rate of return, i.e., cost of capital will be applied. In contrast, short-term U.S. Treasury yields are more volatile and largely a function of Federal Reserve monetary policy.

Q. PLEASE EXPLAIN THE ESTIMATION OF THE EXPECTED EQUITY RISK PREMIUM FOR THE MARKET.

A. The basis of the market equity risk premium is explained in detail in Note 1 on page 2 of Schedule PMA-9. It is derived from a weighted average of the most recent thirteen weeks ending March 7, 2014 3-5 year median total market price appreciation projections from *Value Line* (25% weight); the PRPM™ predicted market equity risk premium using monthly equity risk premiums for large company common stocks relative to long-term U.S. Treasury securities from January 1926 through January 2014 (50% weight); and, the arithmetic mean monthly equity risk premiums of large company common stocks relative to long-

term U.S. Treasury bond income yields from SBBI-2013 from 1926-2012 (25% weight). My explanation for weighting PRPM™ results more heavily was explained previously regarding the traditional risk premium analysis. Just as the use of both a proxy group of comparable companies and multiple cost of common equity models adds reliability to the informed expert judgment required in arriving at a recommended common equity cost rate, the use of multiple methods of estimating the market risk premium adds reliability for a CAPM analysis.

The *Value Line*-derived forecasted total market equity risk premium is derived by deducting the 4.40% discussed above from the *Value Line* projected total annual market return of 8.95%, resulting in a forecasted total market equity risk premium of 4.55%. The PRPM™ market equity risk premium is 10.36%; derived using the PRPM™ discussed above, relative to the yields on long-term U.S. Treasury securities from January 1926 through January 2014. The long-term income return on U.S. Government Securities of 5.28% was deducted from the SBBI-2013 monthly historical total market return of 11.83% resulting in an historical market equity risk premium of 6.55%.

The weighted average of the equity risk premiums result in an average total market equity risk premium of 7.96% (7.96% = (4.55% x 25%) + (10.36% x 50%) + (6.55 x 25%)).

Q. WHAT ARE THE RESULTS OF YOUR APPLICATION OF THE TRADITIONAL AND EMPIRICAL CAPM TO THE PROXY GROUP?

A. As shown on Schedule PMA-9, page 1, the average traditional CAPM cost rate is 9.80%, while the median is 9.57% for the nine water companies. The average

ECAPM cost rate is 10.44%, while the median is 10.27%. Consistent with my reliance upon the median DCF and PRPM™ results discussed above, I rely upon the median results of the traditional CAPM and ECAPM for the proxy group, 9.57% and 10.27%, respectively. Thus, as shown on column 6 on page 1, the CAPM cost rate applicable to the proxy group is 9.92%[24] based upon an average of the traditional CAPM and ECAPM results for the proxy group.

Common Equity Cost Rates For The Proxy Group Of Domestic, Non-Price Regulated Companies Based Upon the DCF, RPM and CAPM

Q. PLEASE DESCRIBE THE BASIS OF APPLYING COST OF COMMON EQUITY MODELS TO COMPARABLE RISK, NON-PRICE REGULATED COMPANIES.

A. Applying cost of common equity models to non-price regulated companies, comparable in total risk, is derived from the *"corresponding risk"* standard of the landmark cases of the U.S. Supreme Court, i.e., *Hope* and *Bluefield*, previously discussed. Therefore, it is consistent with the *Hope* doctrine that the return to the equity investor should be commensurate with returns on investments in other firms having corresponding risks based upon the fundamental economic concept of opportunity cost which maintains that the true cost of an investment is equal to the cost of the best available alternative use of the funds to be invested. The opportunity cost principle is also consistent with one of the fundamental principles upon which regulation rests: that regulation is intended to act as a surrogate for competition and to provide a fair rate of return to investors.

[24] 9.92% = (9.57% + 10.27%)/2.

The first step in determining such an opportunity cost of common equity based upon a group of non-price regulated companies comparable in total risk to the nine water companies is to choose an appropriate broad-based proxy group of non-price regulated firms comparable in total risk to the proxy group of nine water companies which excludes utilities to avoid circularity.

The selection criteria for the non-price regulated firms of comparable risk are based upon statistics derived from the market prices paid by investors. *Value Line* betas were used as a measure of systematic risk. The standard error of the regression was used as a measure of each firm's unsystematic or specific risk with the standard error of the regression reflecting the extent to which events specific to a company's operations affect its stock price. In essence, companies which have similar betas and standard errors of the regression, have similar total investment risk. Using a *Value Line* proprietary database dated December 15, 2013, the application of these criteria based upon the nine water companies results in a proxy group of non-price regulated firms comparable in total risk to the average water company in the proxy group of nine water companies as explained on page 4 of Schedule PMA-10.

Q. DID YOU CALCULATE COMMON EQUITY COST RATES USING THE DCF, RPM AND CAPM FOR THE PROXY GROUP OF DOMESTIC, NON-PRICE REGULATED COMPANIES THAT ARE COMPARABLE IN TOTAL RISK TO THE UTILITY PROXY GROUP?

A. Yes. Because the DCF, RPM and CAPM have been applied in an identical manner as described above relative to the market data of the nine water companies, I will

not repeat the details of the rationale and application of each model shown on page 1 of Schedule PMA-10. An exception is that, in the application of the RPM, I did not use public utility-specific equity risk premiums nor did I apply the PRPM™ to the individual companies. Pages 2 through 4 of Schedule PMA-10 present the basis of selection, the identities of the companies in the proxy group of non-price regulated companies as well as relevant notes.

Page 5 of Schedule PMA-10 contains the derivation of the DCF cost rates. As shown, the median DCF cost rate for the proxy group of twenty-eight non-price regulated companies comparable in total risk to the nine water companies, is 11.88%.

Pages 6 through 8 contain information relating to the 10.79% RPM cost rate for the proxy group of twenty-eight non-price regulated companies summarized on page 6. As shown on Line No. 1 of page 6 of Schedule PMA-10, the consensus prospective yield on Moody's Baa rated corporate bonds of 5.90% based upon the six quarters ending with the second quarter of 2015 averaged with the long-range forecasted yields for 2015-2019 and 2020-2024 from the March 1, 2014 and December 1, 2013 *Blue Chip*. Since the twenty-eight non-price regulated companies comparable in total risk to the nine water companies have an average Moody's bond rating of Baa2 as shown on page 7 of Schedule PMA-10, no adjustment is necessary to make the prospective bond yield applicable to the Baa corporate bond yield. Thus, the expected specific bond yield is 5.90% for the twenty-eight non-price regulated companies as shown on Line No. 1 on page 6 of Schedule PMA-10. When the beta-adjusted risk premium of 4.89% relative to the

proxy group of non-price regulated companies, as derived on page 8, is added to the prospective Baa rated corporate bond yields of 5.90% and the indicated RPM cost rate is 10.79%.

Page 9 contains the details of the application of the traditional CAPM and ECAPM to the proxy group of twenty-eight non-price regulated companies comparable in total risk to the nine water companies. As shown, the median traditional CAPM and ECAPM cost rates are 9.97% and 10.57%, respectively, for the twenty-eight non-price regulated companies which, when averaged, result in an indicated CAPM cost rate of 10.27%.

Q. WHAT IS YOUR CONCLUSION OF THE COST RATE OF COMMON EQUITY BASED UPON THE PROXY GROUP OF NON-PRICE REGULATED COMPANIES COMPARABLE IN TOTAL RISK TO THE NINE WATER COMPANIES?

A. As shown on page 1 of Schedule PMA-10, the results of the DCF, RPM and CAPM applied to the non-price regulated group comparable in total risk to the nine water companies are 11.88%, 10.79% and 10.27%, respectively. Based upon these results, I will rely upon the average DCF, RPM and CAPM result of 10.90% for the proxy group of non-price regulated companies as summarized on page 1 of Schedule PMA-10.

Conclusion of Common Equity Cost Rate

Q. WHAT IS YOUR RECOMMENDED COMMON EQUITY COST RATE?

A. It is 10.90% based upon the indicated common equity cost rate resulting from the application of multiple cost of common equity models to the nine water companies adjusted for AWC's flotation costs and business risk.

I employ multiple cost of common equity models as primary tools in arriving at my recommended common equity cost rate because; 1) no single model is so inherently precise that it can be relied upon solely to the exclusion of other theoretically sound models; 2) all of the models are market-based; 3) the use of multiple models adds reliability to the estimation of the common equity cost rate; and 4) as demonstrated above, the prudence of using multiple cost of common equity models is supported in both the financial literature and regulatory precedent. Therefore, no single model should be relied upon exclusively to estimate investors' required rate of return on common equity.

The results of the cost of common equity models applied to the nine water companies are shown on Schedule PMA-1, page 2 and are summarized below:

Table 3

	Proxy Group of Nine Water Companies
Discounted Cash Flow Model	8.58%
Risk Premium Model	11.26
Capital Asset Pricing Model	9.92
Cost of Equity Models Applied to Comparable Risk, Non-Price Regulated Companies	10.98
Indicated Common Equity Cost Rate	10.45%
Flotation Cost Adjustment	0.20
Business Risk Adjustment	0.25
Recommended Common Equity Cost Rate	10.90%

Based upon these common equity cost rate results, I conclude that a common equity cost rate of 10.45% is indicated for the nine water companies before the flotation cost and business risk adjustments previously discussed and shown on Line Nos. 6 and 7 on page 1 of Schedule PMA-1.

Flotation Cost Adjustment

Q. WHAT ARE FLOTATION COSTS?

A. Flotation costs are those costs associated with the sale of new issuances of common stock. They include market pressure and the essential costs of issuance, e.g., underwriting fees and out-of-pocket costs for printing, legal, registration, etc.

Q. WHY IS IT IMPORTANT TO RECOGNIZE FLOTATION COSTS IN THE ALLOWED COMMON EQUITY COST RATE?

A. It is important because there is no other mechanism in the ratemaking paradigm through which such costs can be recovered. Because these costs are real and legitimate, recovery of these costs should be permitted. As noted by Morin:

> The costs of issuing these securities are just as real as operating and maintenance expenses or costs incurred to build utility plants, and fair regulatory treatment must permit recovery of these costs....
>
> The simple fact of the matter is that common equity capital is not free....[Flotation costs] must be recovered through a rate of return adjustment.[25]

Q. SHOULD FLOTATION COSTS BE RECOGNIZED ONLY WHEN THERE WAS AN ISSUANCE DURING THE TEST YEAR OR THERE IS AN IMMINENT POST-TEST YEAR ISSUANCE OF ADDITIONAL COMMON STOCK?

A. No. As noted above, there is no mechanism to recapture such costs in the ratemaking paradigm other than an adjustment to the allowed common equity cost rate. Flotation costs are charged to capital accounts and are not expensed on a utility's income statement. As such, flotation costs are analogous to capital investments reflected on the balance sheet. Recovery of capital investments relates to the expected useful lives of the investment. Since common equity has a very long and indefinite life (assumed to be infinity in the standard regulatory DCF model), flotation costs should be recovered through an adjustment to

[25] Morin 321.

common equity cost rate even when there has not been an issuance during the test year or in the absence of an expected imminent issuance of additional shares of common stock.

Historical flotation costs are a permanent loss of investment to the utility and should be accounted for. When any company, including a utility, issues common stock, flotation costs are incurred for legal, accounting, printing fees and the like. For each dollar of issuing market price, a small percentage is expensed and is permanently unavailable for investment in utility rate base. Since these expenses are charged to capital accounts and not expensed on the income statement, the only way to restore the full value of that dollar of issuing price with an assumed investor required return of 10% is for the net investment, $0.95, to earn more than 10% to net back to the investor a fair return on that dollar. In other words, if a company issues stock at $1.00 with 5% in flotation costs, it will net $0.95 in investment. Assuming the investor in that stock requires a 10% return on his / her invested $1.00, or $0.10, the company needs to earn approximately 10.5% on its invested $0.95.

Q. AWC IS A WHOLLY-OWNED SUBSIDIARY OF ARTESIAN RESOURCES CORP. IS THERE A NEED TO REFLECT FLOTATION COSTS IN THIS SITUATION?

A. Yes. With the exception of retained earnings, AWC receives needed new common equity capital from the Parent, raised in the capital markets through public offerings of its common stock, incurring issuance costs to do so. Denying recovery of the issuance costs associated with the common equity capital that is

invested in AWC would penalize investors, making it more difficult to raise new equity capital at a reasonable cost.

Q. DO THE COMMON EQUITY COST RATE MODELS YOU HAVE USED ALREADY REFLECT INVESTORS' ANTICIPATION OF FLOTATION COSTS?

A. No. All of these models assume no transaction costs. The literature is quite clear that these costs are not reflected in market prices paid for common stocks. For example, Brigham and Daves confirm this and provide the methodology utilized to calculate the flotation adjustment which will be discussed subsequently[26] and shown on pages 1 and 2 of Schedule PMA-11. In addition, Morin confirms the need for such an adjustment even when no new issue is imminent as previously noted.[27] Consequently, it is proper to include a flotation cost adjustment when using cost of common equity models to estimate the common equity cost rate.

Q. HOW DID YOU CALCULATE THE FLOTATION COST ALLOWANCE?

A. I modified the DCF calculation to provide a dividend yield that would reimburse investors for issuance costs in accordance with the previously cited literature by Brigham and Daves as well as Morin. The flotation cost adjustment recognizes the costs of issuing equity that were incurred by the Parent since 2004. Based upon the issuance costs shown on page 1 of Schedule PMA-11, an adjustment of 0.20% is required to reflect the flotation costs applicable to the proxy group as shown on Line No. 6 on Schedule PMA-1, page 2.

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[26] Brigham and Daves 342.
[27] Morin 327-30.

Business Risk Adjustment

Q. IS THERE A WAY TO QUANTIFY A BUSINESS RISK ADJUSTMENT DUE TO AWC'S SMALL SIZE RELATIVE TO THE PROXY GROUP?

A. Yes. As discussed above, increased risk due to small size must be taken into account in the cost of common equity consistent with the financial principles of risk and return. Since the Company is smaller in size relative to the proxy group measured by the estimated market capitalization of common equity for AWC, whose common stock is not traded, it has greater business risk than the average company in the proxy group.

Table 4

	Market Capitalization(1) ($ Millions)	Times Greater than the Company
AWC	$220.188	
Proxy Group of Nine Water Companies	1,769.332	8.0x

(1) From page 1 of Schedule PMA-12.

Because the Company's common stock is not publicly traded, I have assumed that if it were, the common shares would be selling at the same market-to-book ratio as the average market-to-book ratio for the proxy group, 213.0%, on March 3, 2014 as shown on page 2 of Schedule PMA-12. Since my recommended common equity cost rate is based upon the market data of the proxy group, it is reasonable to use the market-to-book ratios of the proxy group to estimate AWC's market capitalization. Hence, the Company's market capitalization is estimated at $220.188 million based upon the average market-to-

book ratio of the proxy group. In contrast, the market capitalization of the average water company was $1.769 billion on March 3, 2014, or 8.0 times the size of AWC's estimated market capitalization.

Therefore, it is necessary to upwardly adjust the common equity cost rate of 10.45% based upon the nine water companies to reflect AWC's greater risk due to its smaller relative size. The determination is based upon the size premiums for decile portfolios of New York Stock Exchange (NYSE), American Stock Exchange (AMEX) and NASDAQ listed companies for the 1926-2012 period and related data from SBBI® – 2013. The nine water companies fall in between the 5th and 6th deciles and AWC's size premium would fall in between the 9th and 10th deciles if its stock were traded and sold at the March 3, 2014 average market/book ratio of 213.0% experienced by the nine water companies. As shown on page 1, the size premium spread between the 5th and 6th deciles and the 9th and 10th deciles is 2.70%. In view of the foregoing, an upward adjustment of 0.25% to reflect AWC's greater relative business risk due to its smaller size is both reasonable and conservative.

Adding a flotation cost adjustment of 0.20% and a business risk adjustment of 0.25% to the 10.45% indicated common equity cost rate based upon the nine water companies before adjustment, results in a flotation cost and business risk-adjusted common equity cost rate of 10.90%[28] which is my recommended common equity cost rate.

[28] 10.90% = 10.45% + 0.20% + 0.25%.

In my opinion, a common equity cost rate of 10.90% which results in an overall rate of return of 8.40% is both reasonable and conservative.

A common equity cost rate of 10.90% is consistent with the *Hope* and *Bluefield* standards of a fair and reasonable return which ensures the integrity of presently invested capital and enables the attraction of needed new capital on reasonable terms. It also ensures the continued reliability and quality of service to the benefit of ratepayers. Thus, it balances the interests of both ratepayers and the Company.

A common equity cost rate of 10.90% is also reasonable in light of current and expected economic and capital market conditions given the previous discussion of expected rising interest rates and capital costs.

Q. DOES THAT CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.